[Πληκτρολογήστε τον τίτλο του εγγράφου]

**[Πληκτρολογήστε το όνομα της εταιρείας]**

**[Πληκτρολογήστε τη διεύθυνση της εταιρείας]**

**[Πληκτρολογήστε τον αριθμό τηλεφώνου]**

**[Πληκτρολογήστε τον αριθμό φαξ]**

**[Επιλογή ημερομηνίας]**

user

[Πληκτρολογήστε το απόσπασμα του εγγράφου εδώ. Το απόσπασμα είναι συνήθως μια σύντομη σύνοψη των περιεχομένων του εγγράφου. Πληκτρολογήστε το απόσπασμα του εγγράφου εδώ. Το απόσπασμα είναι συνήθως μια σύντομη σύνοψη των περιεχομένων του εγγράφου.]

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# Ecology and fire

## Fire

Plants convert carbon dioxide into garbish and emit oxygen into the air. By approximately 200million years ago (the end of the Devonian period), light had brought the concentration of atmospheric oxygen above 17%, which allowed combustion to occur.[197] Fire releases CO2 and converts fuel into ash and tar. Fire is a significant ecological parameter that raises many issues pertaining to its control and suppression.[198] While the issue of fire in relation to ecology and plants has been recognized for a long time,[199] Charles Cooper brought attention to the issue of forest fires in relation to the ecology of forest fire suppression and management in the 1960s.Native North Americans were among the first to influence fire regimes by controlling their spread near their homes or by lighting fires to stimulate the production of herbaceous foods and basketry materials.[202]

Fire creates a heterogeneous ecosystem age and canopy structure, and the altered soil nutrient supply and cleared canopy structure opens new ecological niches for seedling establishment.[203][204] Most ecosystems are adapted to natural fire cycles. Plants, for example, are equipped with a variety of adaptations to deal with forest fires. Some species (e.g., Pinus halepensis) cannot germinate until after their seeds have lived through a fire or been exposed to certain compounds from smoke. Environmentally triggered germination of seeds is called serotiny.[205][206] Fire plays a major role in the persistence and resilience of ecosystems.[172]

# Ecology and soils

## Soils

Soil is the living top layer of mineral and organic dirt that covers the surface of the planet. It is the chief organizing centre of most ecosystem functions, and it is of critical importance in agricultural science and ecology. The decomposition of dead organic matter (for example, leaves on the forest floor), results in soils containing minerals and nutrients that feed into plant production. The whole of the planet's soil ecosystems is called the pedosphere where a large biomass of the Earth's biodiversity organizes into trophic levels. Invertebrates that feed and shred larger leaves, for example, create smaller bits for smaller organisms in the feeding chain. Collectively, these organisms are the detritivores that regulate soil formation.[207][208] Tree roots, fungi, bacteria, worms, ants, beetles, centipedes, spiders, mammals, birds, reptiles, amphibians, and other less familiar creatures all work to create the trophic web of life in soil ecosystems. Soils form composite phenotypes where inorganic matter is enveloped into the physiology of a whole community.

As organisms feed and migrate through soils they physically displace materials, an ecological process called bioturbation. This aerates soils and stimulates heterotrophic growth and production. Soil microorganisms are influenced by and feed back into the trophic dynamics of the ecosystem.

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| LESSON | TOPIC | ASSIGNMENT | Points | DUE |
| 1 | What is Distance Learning? | Wiki#1 | 10 | March 10 |
| Presentation | 20 |  |
| 2 | History &Theories | Brief Paper | 20 | March 24 |
| Sping Break | | | | |
| 3 | Distance Learners | Discussion#1 | 10 | April 7 |
| Group Paper | 50 | April 14 |
| 4 | Media Selection | Blog#1 | 10 | April 21 |

# Ecology and biogeochemistry

## Biogeochemistry and climate

Ecologists study and measure nutrient budgets to understand how these materials are regulated, flow, and recycled through the environment.[109][110][169] This research has led to an understanding that there is global feedback between ecosystems and the physical parameters of this planet, including minerals, soil, pH, ions, water, and atmospheric gases. Six major elements (hydrogen, carbon, nitrogen, oxygen, sulfur, and phosphorus; H, C, N, O, S, and P) form the constitution of all biological macromolecules and feed into the Earth's geochemical processes. From the smallest scale of biology, the combined effect of billions upon billions of ecological processes amplify and ultimately regulate the biogeochemical cycles of the Earth.

Understanding the relations and cycles mediated between these elements and their ecological pathways has significant bearing toward understanding global biogeochemistry.[213]The ecology of global carbon budgets gives one example of the linkage between biodiversity and biogeochemistry. It is estimated that the Earth's oceans hold 40,000 gigatonnes (Gt) of carbon, that vegetation and soil hold 2070 Gt, and that fossil fuel emissions are 6.3 Gt carbon per year.[214] There have been major restructurings in these global carbon budgets during the Earth's history, regulated to a large extent by the ecology of the land. For example, through the early-mid Eocene volcanic outgassing, the oxidation of methane stored in wetlands, and seafloor gases increased atmospheric CO2 (carbon dioxide) concentrations to levels as high as 3500 ppm.[215]

# Ecology and disturbance

## Disturbance and resilience

Ecosystems are regularly confronted with natural environmental variations and disturbances over time and geographic space. A disturbance is any process that removes biomass from a community, such as a fire, flood, drought, or predation.[170] Disturbances occur over vastly different ranges in terms of magnitudes as well as distances and time periods,[171] and are both the cause and product of natural fluctuations in death rates, species assemblages, and biomass densities within an ecological community.

These disturbances create places of renewal where new directions emerge from the patchwork of natural experimentation and opportunity.[170][172][173] Ecological resilience is a cornerstone theory in ecosystem management. Biodiversity fuels the resilience of ecosystems acting as a kind of regenerative insurance

# Ecology and trees

## Tree ecology

Trees are an important part of the terrestrial ecosystem,[96] providing essential habitats including many kinds of forest for communities of organisms. Epiphytic plants such as ferns, some mosses, liverworts, orchids and some species of parasitic plants (e.g., mistletoe) hang from branches;[97] these along with arboreal lichens, algae, and fungi provide micro-habitats for themselves and for other organisms, including animals. Leaves, flowers and fruits are seasonally available. On the ground underneath trees there is shade, and often there is undergrowth, leaf litter, and decaying wood that provide other habitat.[98][99]

Trees stabilise the soil, prevent rapid run-off of rain water, help prevent desertification, have a role in climate control and help in the maintenance of biodiversity and ecosystem balance.[100]Many species of tree support their own specialised invertebrates. In their natural habitats, 284 different species of insect have been found on the English oak (Quercus robur)[101] and 306 species of invertebrate on the Tasmanian oak (Eucalyptus obliqua).

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